

Conference Paper

To the Problem of Terminology Unification in Amphibian Anomaly Classifications

M.N. Danilova

Ural Federal University, Mira 19, Yekaterinburg 620002, Russia

Abstract

The article is devoted to the unification of the terminology used in the description of amphibian abnormalities. The author proposes using only medical and zoological terms to denominate both skeletal and other kinds of anomalies. The article describes defects in the form of a formula that contains the disorder name, its symmetry and location on the body. The latter requires highly detailed elements of the structure of an animal for recording anomalies in a shared database.

Keywords: amphibians, abnormalities, terminology, databases

Corresponding Author:

M.N. Danilova

manidan@rambler.ru

mary.daniloff@gmail.com

Received: 23 January 2018

Accepted: 20 April 2018

Published: 3 May 2018

Publishing services provided by
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Selection and Peer-review under the responsibility of the Amphibian and Reptiles Anomalies and Pathology Conference Committee.

1. Introduction

The wide spread of the English language in international communication and research publication could not fail to affect terminology. Initially, scientific language in biology dates back to Greek and Latin, from which it retains many of terms, even if anglicized. At the same time, the desire of many researchers to make the results of their work more widely available to the scientific community (even if they are not very confident in classical biological terminology) had led them to use English names exclusively. This work raises questions about terminology unification and the description of identified abnormalities in the anatomy and morphology of amphibians.

2. Discussion

The creation of large databases collected by many researchers inevitably requires a unified approach to the description and registration of the studied processes and phenomena. The necessity of a unified method of naming abnormal structure and morphology is not questioned. This was evidenced by some recent publications [2, 4, 5, 7].

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If skeletal anomalies often retain their connection with traditional medico-zoological nomenclature (polymelia, olygodactylia, poyphalangia, microcephalia, etc. [1, 4, 5]), external symptoms of defects often have English names (iris absent, bone bridge, skin web, domed head, pigment lacking, curved jaw etc. [5]). This creates a nomenclatural heterogeneity that, in our opinion, needs to be adjusted.

Our proposal is that the description of amphibian abnormalities fully return to basic scientific nomenclature based on ancient languages. This could rely on a well-designed and regularly audited medical terminology, as used in veterinaries [1]. Modern medical research often provides an answer about the reasons for anomalies that could be useful in the case of amphibians [3, 6, 8]. To avoid linguistic errors, it would be advisable to involve scientists who know ancient languages better than others to take over the function of nomenclature correction. In the future, it will be possible to create a term dictionary with synonyms in different languages.

Another suggestion is to use a description of defects as a formula with abbreviations of terms commonly used in zoology and medicine. The structure of the formula consists of the name of the anomaly according to nomenclature, the type of its symmetry and localization on the body.

For identifying the location of the abnormality relative to the axis of the body, it is possible to use the following abbreviations: D (*dexter*) for a location on the right and S (*sinister*) for one on the left. A symmetric abnormality might be registered without a sign or as DS.

In the description of the provisions of skeletal anomalies, abbreviated names of the divisions of the spine or extremities parts can be applied:

Cr (cer) - *ceruicis* for neck, Pc (pec) - *pectoralis* for chest, Sc (sac) - *sacra* for croup and Pl (pel) - *pelvis* for pelvic, Hm - *humerus*, Fm - *femur*, Rd-ul - *radius - ulna*, Tb-fb - *tibia-fibula*, An - *antebrachium*, Tr - *tarso*, Mn - *manus*, Pd - *pedibus*.

For fingers and toes, abbreviations might be used - Dg (*digitus*) 1-5, for the number of the phalanges - PhDg (*phalanx digitorum*) 1-5 (or Greek synonyms). To indicate the quantitative changes of properties, it is possible to use numbers.

Here are potential examples of the formal description of abnormalities:

polymelia 2 D Tb-fb - double lower leg of right hindlimb,

hemymelia S Fm - incomplete hip of the left hindlimb,

polyphalangia 2 S Pd Dg 3 PhDg 2 - double second phalanx of the third toe of the left hindlimb, aniridia D - iris is absent in the right eye.

We believe that for more accurate registration of anomalies in shared databases, it would be better to specify in detail the elements of the structures listed in the table. Sections of the table with morphological and skeletal disorders should be organized on the basis of division of the body (skeleton) sequentially, from head to tail, with as many details as possible. Internal abnormalities ought to characterize every organ system with all parts of the structure from beginning to end.

Problems with the translation of English terms for traditional medico-zoological nomenclature can be avoided by using a combination of terms. This will facilitate the recording of data for researchers who are not very fluent in ancient languages, allowing them to master an alternative terminology gradually.

3. Conclusion

In this work, we offer some modifications in terminology such as using medico-zoological nomenclature for all kinds of abnormalities. Describing malformations as a formula containing disorder name, its symmetry and the location on the body seems to be more useful because it is shorter than the full name. A table containing as much detail as possible allows us to register anomalies in shared databases completely accurately. English terminology could be used in databases as alternative terms to make recording easier. We believe that our propositions could be applied and will not be rejected by the scientific community.

Acknowledgements

The author is deeply grateful to Professor V.L. Vershinin for his help and support during the preparation of this work.

References

- [1] Jezyk PF: Constitutional Disorders of the Skeleton in Dogs and Cats In: Newton CD, Nunamaker DM, eds. Textbook of Small Animal Orthopaedics. Philadelphia: JB Lippincott Company; 1985: 646-647.
- [2] Kovalenko EE: The variability of postcranial skeleton of tailless amphibians (Amphibia, Anura). Thesis of doctor of the biological sciences in a scientific report, St Petersburg State University; St Petersburg, 2000.

- [3] Cormier-Daire V, Le Merrer M: Classification moléculaire des maladies osseuses constitutionnelles. Médecine thérapeutique. 2001; V. 7, Is. 6, Juin – Juillet: 440-444.
- [4] Meteyer CY: Field guide to malformations of frogs and toads with radiographic interpretations. Biological Science Report; 2000.
- [5] Nekrasova OD: Classification of amphibians anomalies. Proceedings of Ukrainian Herpetological Society. 2008; 11: 55-58,
- [6] Piga AM, Ferreira VA, Villaverde-Hueso A: Implications of the new etiopathogenic approach in the classification of constitutional and genetic bone diseases. Reumatologia Clinica. 2011; 7(4): 248-254.
- [7] Vershinin VL: The basics of methodology and methods of research of anomalies and pathologies of amphibians. Yekaterinburg; 2015.
- [8] Warman ML, Cormier-Daire V, Hall C, Krakow D, Lachman R, LeMerrer M, Mortier G, Mundlos S, Nishimura G, Rimoin DL, Robertson S, Savarirayan R, Sillence D, Spranger J, Unger S, Zabel B, Superti-Furga A: Nosology and classification of genetic skeletal disorders: 2010 revision. Am J Med Genet A. 2011; 155A(5): 943-968.